

DIAGNOSTIC METHOD AND APPARATUS FOR NON-DESTRUCTIVELY OBSERVING LATCH DATA

Abstract

The invention provides a circuit that can observe data within shift registers without altering the data. The circuit includes selectors connected to the inputs and outputs of the shift registers. The selectors selectively connect the input with the output of a selected shift register to form a wiring loop for the selected shift register. A control device connected to the wiring loop uses the wiring loop to cause the data to be continually transferred from the output of the selected shift register to the input of the selected shift register and back through the selected shift register in a circular manner. The control device includes a counter used for determining the length of a selected shift register and a set of registers to store, for future use when rotating data in the shift registers, the length of each shift register. The control device also includes a data output accessible from outside the circuit. An observation wire is connected to the wiring loop, and the data passes from the wiring loop to the control device through the observation wire. The con-

trol device outputs data appearing on the wiring loop as the data is circulated through the selected shift register to permit data within the selected shift register to be observed outside the circuit without altering the data within the selected shift register.